REMARKS

Summary of Office Action

Claims 18-45, which were kindly renumbered by the Examiner, are pending.

Claims 18-45 have been rejected under 35 U.S.C.§ 112 as "new matter" failing to comply with the written description requirement, and for being indefinite. Claims 18-43 also have been rejected under 35 U.S.C. § 101 as directed to non-statutory matter.

Further, the Examiner has noted informalities in claim 37 and objected to the drawings.

Applicants' Reply

Applicants thank the Examiner for properly numbering the claims, which were incorrectly numbered by applicants in the previous Reply.

Applicants have amended claim 37 to correct the noted informality.

Applicants submit a new set of drawings that are in compliance with 37 CFR 1.21(d). Applicants recognize that FIG. 10b is difficult to reproduce properly. If the submitted FIG. 10b is unacceptable, applicants propose to delete the FIG. 10b.

Applicants respectfully traverse the § 101 rejections, the § 112 new matter and indefiniteness rejections.

§ 101 rejections

Applicants have amended the claims so that they are directed to computer readable medium for realizing the functionality of the inventive computational methods which are described in the specification for identifying a most likely biological pathway of a set of interacting molecules and for identifying a molecular interaction network representation for a set of interacting molecules within a known biological system, respectively.

Applicants respectfully submit that the claims are directed to statutory matter under § 101.

§ 112 new matter rejections

Applicants have amended the claims using terms that are used in the specification or alternatively are defined in the claims themselves. No new matter has been added to the claims, which are fully supported by the written description. Applicants note that claim 18 is fully described in the specification, for example, at ¶¶ [0021] - [0026]. Claim 36 is described, for example, at ¶¶ [0021] - [0026] and ¶¶ [0035] - [0040]. Claim 38 is described, for example, at ¶¶ [0021] - [0026], ¶¶ [0044] - [0069] and the original claims 1-17.

Applicants note in detail with respect to independent claim 18, step (a) is specifically described at ¶ [0022]. Step (b) is described at the bottom of ¶ [0021]. Step (c) describes common "maximum likelihood" statistics techniques or practice. (The term "most likely" and similar terms "most favorable one," and "most strongly predicted" are used through out the specification, for example, in ¶¶ [0024], [0039], [0040], and [0041]).

Further, step (b) (i) and (ii) are described in ¶ [0023]. Step (b) (iii) and (iv) are described in ¶ [0024]. Step (b) (v) is shown as equation 4 in ¶ [0025].

Similar support for independent claims 36 and 38 is found in the specification but for brevity is not cited here in detail.

Applicants respectfully submit that the pending claims fully conform to the "written description" requirements of § 112.

§ 112 indefiniteness rejections

Applicants appreciate the Examiner's patience and diligence in examining the application.

Applicants have amended claims 1-45 to remove the confusing language, which the Examiner noted in detail. (See Office Action, pages 4 and 5). The amendments include cancellation of several claims. The remaining claims now use terms that are used in the specification or alternatively are defined in the claims themselves, or are common in the art.

Applicants have cancelled claims that refer to equations by number, or have replaced such references by text.

Applicants note the terms "upstream" and "downstream" are used at several places in the context of neighboring molecules in a network pathway. (See e.g., ¶ [0020]. In the context of the specification and the claims, these terms are definite and are readily understood by one in the art.

With respect to claim, 25 and 32, applicants submit that the claim to determining [the highest posterior probability] by Markov Chain Monte Carlo techniques is proper and definite. The use of "Markov Chain Monte Carlo" or similar adjectives to qualify or name statistical techniques or methods is common in both patent and technical literature. For example, "Monte Carlo simulation" is commonly understood in the art to mean any simulation based on Monte Carlo principles. Similarly, here applicants properly claim determining posterior probabilities using techniques based on Markov Chain and Monte Carlo principles. The specification provides specific examples determination of posterior probability using techniques based on Markov Chain Monte Carlo (See e.g., ¶ [0035]).

With respect to claims 44 and 45, applicants note that the disclosure describes identification of molecular interaction between molecules in a biology network. Molecular interactions between specific molecules of interest may be computed and identified using, for example, claim 38. Claims 44 relates to the use of such identified molecular interactions (e.g., between proteins) for development of new pharmaceutical drugs or compounds. The utility of the identified molecular interaction is tested (e.g., drug screening) is the subject of claim 44 and 45. Claim 44 has been amended to explicitly introduce the test compound in the biology network in the drug screening procedure. Applicants note that the drug screening procedure of claim 44, does not require (or preclude) "wet contact" experiments. All steps of procedure of claim 44 may be conducted computationally as can be understood from the context of the specification.

Applicants respectfully submit that amended claims 18-45 are clear, definite and fully conform to all requirements of § 112.

Amendments to the Drawings

Applicants submit a complete set of drawings including replacement sheets corresponding to FIGS. 2, 3, 8 and 10.